

thin; apex reddish, lower part with a whitish cuticle, ornamented above and below with narrow dark reddish-brown spiral bands, with a broader one just below the periphery; whorls $5\frac{1}{2}$, convex, first two with four or five raised spiral striæ, lower whorls almost smooth, having only numerous close-set microscopical spirals; peristome white, slightly expanded; aperture circular, inner portion showing exterior bands; operculum normal.

Maj. diam. $13\frac{1}{2}$, alt. 14 mm.

Hab. Muswar Island, Geelvink Bay, Dutch New Guinea.

Near *pellucidum*, Grat., but readily distinguished from that species by its dark coloration, especially below the periphery of last whorl; the spirals on the apex of *muswarensis* are stronger, whereas the microscopical spirals on last whorl are weaker than those of *pellucidum*.

This shell also bears a superficial resemblance to the darker coloured specimens of the Bornean *L. sericatum*, Pf., but is easily separated by the absence of raised spirals.

LIII.—Five new Culicidæ from Ashanti.

By F. V. THEOBALD, M.A. &c.

THE five new Culicidæ described here were collected by Dr. Graham in Ashanti. One has to be placed in a new marked genus, which has been called *Pectinopalpus*.

Stegomyia apicoargentea, sp. n.

Head black, with silvery white central spot and white eye-borders; palpi and proboscis deep brown, the former snow-white at apex. Thorax deep brown, with two large round silvery white spots and a small anterior median one; prothoracic lobes white and a small white spot at the base of the wings; pleuræ with white puncta. Abdomen dusky black, last three segments with basal silvery spots, all the segments with basal lateral silvery spots, and the venter with basal white bands. Fore and mid legs with basal creamy bands to metatarsi and first tarsal; hind with an additional band on the second tarsal, and nearly all the third white; femora of fore and mid legs with a white spot below near apex, apex white; in the hind legs base of venter white, and also apex and the tibiæ have a white spot beneath near base.

Length.—4 mm.

Time of capture.—7. viii. 07 and 9. ix. 07.

Habitat.—Obuasi and Kumasi (*Dr. Graham*).

Observations.—Two females, both taken in bush, one at 5 P.M. at Kumasi. Dr. Graham says specimens taken in bush-paths outside Obuasi and outside Kumasi in August and October, from 2 to 5 P.M. Described from a perfect female. The marked thoracic ornamentation and the leg banding combined will at once separate it from all other African *Stegomyia*.

Ædimorphus punctothoracis, sp. n.

Head brown in the middle, black at the sides; proboscis and palpi unbanded. Thorax rich brown, with six silvery white spots; scutellum silvery white. Abdomen dark brown, with basal pale lateral spots. Legs unbanded, apices of tibiæ and femora silvery white.

♀.—Head dark, clothed with flat black scales in front and at the sides with some dull ochreous ones, and white ones at the sides, a patch of narrow-curved dull ochreous ones at the back, and black upright forked scales; proboscis and palpi black; antennæ dark brown, basal segment bright brown with a few small flat scales.

Thorax dark rich brown, with very small dull golden narrow-curved scales, and six spots of small flat silvery white scales; chætæ dark brown; scutellum clothed with flat silvery white scales; metanotum dark brown; pleuræ bright brown, with pale puncta.

Abdomen black, with basal lateral snowy white spots and golden border-bristles; venter mostly dark.

Legs dark brown, venter of femora for the basal two-thirds pale creamy; a snow-white spot at the apex of the femora and tibiæ; chætæ golden; fore and mid ungues equal, uni-serrate.

Wings with the first fork-cell a little longer and narrower than the second fork-cell, its stem about half the length of the cell, its base nearly level with that of the latter; stem of the second fork-cell about two-thirds the length of the cell; posterior cross-vein not quite its own length distant from the mid.

Length.—2·3 mm.

♂.—Palpi dark brown, hair-tufts dark on the last two segments, the penultimate rather swollen and a little longer than the apical one; antennæ plumose, plume-hairs brown. Fore ungues unequal, the larger with a large tooth, the

smaller with a small one near the base ; mid very unequal, simple ; hind equal and simple.

Wings with the fork-cells shorter than in female, of nearly equal length ; their stems nearly as long as the cells, posterior cross-vein about its own length distant from the mid.

The male claspers are very marked, being bifid.

Length.—2.3 mm.

Habitat.—Accra (Dr. Graham).

Time of capture.—11, 12, 16, 18, 20. vi. 08.

Observations.—Caught in latrines at 8 A.M. Described from two perfect females and two males. A very distinct small species with marked thoracic spotting. Very numerous in June. Three females taken in same locality, 12 and 18. vi. 08, show only the two anterior silvery thoracic spots.

Genus PECTINOPALPUS, gen. nov.

Head clothed with narrow-curved scales except at the sides and around the eyes in front, and some upright forked scales ; antennæ plumose ; palpi of male as long as the proboscis, irregular in form, of three segments, basal one swollen at base, apical twice as long as the penultimate, both with rather long lateral hairs, the long segment with a series of outstanding scales of peculiar form in two groups of different shape. Thorax and scutellum with long narrow-curved scales.

A very distinct genus, told at once by the peculiar male palpi. I have been unable to find the female.

Pectinopalpus fuscus, sp. n.

Uniformly fuscous brown. Fragile. Palpi very irregular and twisted in form.

♂.—Head black, with pale smoky grey narrow-curved scales over most of the area, dusky grey flat lateral scales, and almost white ones around the eyes. Palpi and proboscis deep brown ; antennæ brown, with pale bands and flaxen plume-hairs ; the palpi have eight pale outstanding scales on long stalks on one side of the apical area of the long segment, and then eight dark long outstanding scales below of different form.

Thorax brown, with dull brown and dull pale golden rather long narrow-curved scales and deep brown chætæ ; scutellum paler brown, with narrow-curved pale scales and six brown bristles to the mid lobe ; metanotum pale brown.

Abdomen uniformly fuscous brown.

Legs uniformly brown ; femora and coxæ paler, the former

especially below ; fore and mid unguis unequal and uniserrate, hind equal and simple.

Wings with rather broad scales on the apex, with rounded tips ; first fork-cell longer and narrower than the second, its base about level with that of the latter, its stem more than half the length of the cell, stem of the second forked cell about the same length and about two-thirds the length of the cell ; posterior cross-vein longer than the mid, about twice its own length distant from it.

Length.—2.8 to 3 mm.

Habitat.—Obuasi (*Dr. Graham*).

Time of capture.—20. viii. 29 and 30. ix. 07.

Observations.—Caught in bush at 10 A.M. and 6 P.M.

A very obscure species, unless carefully examined, when the peculiar palpi at once separate it. I have been unable to distinguish the female in this collection.

Culex nigrocostalis, sp. n.

Very like a small *C. fatigans* or *C. pallidocephala*, but the thorax uniformly clothed with dull golden brown scales and the outer costal border of the wings very dark.

♀.—Head black, clothed with dull grey ragged narrow-curved scales, small dull grey flat lateral scales, and black upright forked scales ; clypeus deep brown, palpi and proboscis deep black ; antennæ deep brown, with narrow pale bands.

Thorax deep brown, clothed uniformly with small hair-like curved dull golden brown scales and deep brown chætæ, dull golden at their base ; scutellum paler brown, with scanty dusky hair-like curved scales, dull golden in some lights, and six deep brown border-bristles to the mid lobe.

Abdomen blackish brown, with narrow basal white bands and golden brown to golden border-bristles.

Legs deep blackish brown, unbanded ; femora pale below, a few pale scales at the apices of the femora and tibiæ ; unguis small, equal, and simple.

Wings with dark brown scales, the outer costal border and the first long vein and subcostal black ; first fork-cell longer and narrower than the second posterior, its base nearer the base of the wing, its stem less than one-third the length of the cell ; stem of the second fork-cell about two-thirds the length of the cell ; posterior cross-vein longer than the mid, sloping backwards, and about two and a half times its own length distant from it.

Length.—3 mm.

♂.—Like the female, but the abdomen more prominently banded. Palpi and proboscis deep brown, the former acuminate and longer than the proboscis by the last and apical portion of the penultimate segment, the last two segments with scanty long dark hairs. Ungues of fore and mid legs unequal, uniserrate, hind equal and simple. Wings with short fork-cells, the first slightly narrower and much longer than the second fork-cell, stem of the first about three-fourths the length of the cell, stem of the latter nearly as long as the cell; posterior cross-vein longer than the mid, nearly three times its own length distant from it.

Length.—4 mm.

Habitat.—Accra (*Dr. Graham*).

Hatched out.—7 and 18. vi. 08 (♂), 7. vii. 08 (♀).

Observations.—Described from a single perfect female, hatched from a long siphoned larva, and three males. This is a small rather obscure *Culex*, near *C. fatigans*, Wied., and *C. pallidocephala*, Theob., but can be told from both by the very dark outer costal border and veins near it. A small fragile species.

Culex pallidothoracis, sp. n.

Thorax uniformly clothed with pale ochreous scales. Abdomen dark brown in the female, with traces of pale basal banding, prominent in the male. Palpi, proboscis, and legs uniformly dark brown.

♀.—Head black, densely clothed with narrow-curved pale ochreous almost creamy scales, flat similar coloured lateral scales, rich golden brown central upright forked scales, and black upright ones at the sides; golden chætæ between the eyes, dark ones at the sides; clypeus brown; palpi and proboscis almost black; antennæ brown.

Thorax black, densely and uniformly clothed with narrow-curved pale ochreous almost creamy scales, with golden and brown chætæ; scutellum very pale, with similar scales and brown border-bristles; metanotum brown; pleuræ very pale.

Abdomen dark brown, some of the apical segments with basal creamy bands; border-bristles brown, golden at their apices; venter with many pale scattered scales; traces of basal lateral pale spots.

Legs uniformly brown, with dull ochreous reflections, paler beneath; unguis equal and simple.

Wings with the fork-cells long; the first longer and narrower than the second posterior, its base nearer the base of

the wing, its stem about one-third the length of the cell ; stem of the second about half the length of the cell ; posterior cross-vein nearly its own length distant from the mid ; scales of typical *Culex* form.

Length.—5 to 5.5 mm.

♂.—Similar to female, but the abdominal banding very pronounced. Palpi acuminate, black at the apices, paler basally, hairs dark ; antennæ with flaxen brown plume-hairs, paler at their apices. Fork-scales dense, dark behind as well as at the sides. Fore and mid unguis unequal, the larger with a large tooth, the smaller with a small one, hind equal and simple. Genitalia with a large broad foliate plate.

Length.—5 to 6 mm.

Habitat.—Obuasi (*Dr. Graham*).

Time of capture.—8. i. 08 ; 10. xii. 07 ; 20. vi. 07 ; 17. vii. 07 ; 7. viii. 07 ; 20. ix. 07 ; 18, 19. x. 07 ; 13. xi. 07.

Observations.—Caught on bush-paths. Described from a series of several males and females. It is very marked on account of the pronounced pale scaled thorax. The females show some variation in regard to abdominal banding, some showing it much more prominently than others.

LIV. — *The Application of Mr. G. W. Smith's Theory of Dwarf Males to Myzostoma*. By A. F. COVENTRY, Magdalen College, Oxford.

MR. G. W. SMITH has recently put forward a new theory to explain the complementary dwarf males found among the Cirripedia pedunculata.

He looks for the interpretation of the peculiar sexual relations among these, and, as he believes, also in the Rhizocephala, to the fundamental nature of secondary hermaphroditism—*i. e.*, imposed on a primitive diœcism, which we must suppose to have been the original condition among the Cirripedia.

Smith has found, both by observation and experiment, that this hermaphroditism can only be imposed on males.

Hence the ordinary monœcious Cirripedes are really males, all the females having been suppressed in the course of evolution ; and the complementary males are in an arrested state of development due to the condition of protandric hermaphroditism—*i. e.*, male generative products ripening before female—through which they at one time passed.

The same reasoning applies with very little modification to the Rhizocephala.